

WHAT IS CLAIMED IS:

1. A computer readable medium having computer-executable instructions, comprising,
5 calculating the sharp points of a digital ink file;
defining segments between the sharp points by
mathematical expressions; and
storing information about the sharp points and the
mathematical expressions as a backbone spline of the digital
10 ink file.

2. The computer readable medium of claim 1, having
further computer-executable instructions comprising combining
the backbone spline with information about the digital ink
15 file to create a contour curve for the digital ink file.

3. The computer readable medium of claim 1, wherein the
information about the digital ink file comprises thickness
information.

20 4. The computer readable medium of claim 3, having
further computer-executable instructions comprising denoising
the digital ink file prior to combining the backbone spline
with the thickness information.

5. The computer readable medium of claim 1, having further computer-executable instructions comprising denoising the digital ink file prior to combining the backbone spline with the information about the digital ink file.

6. The computer readable medium of claim 1, wherein the sharp points comprise points in the digital ink file that deviate the most from straight lines.

7. The computer readable medium of claim 1, wherein the sharp points comprise points at which curvature reverses.

8. The computer readable medium of claim 1, wherein the digital ink file comprises a raw data ink trace.

9. The computer readable medium of claim 1, wherein defining the segments between the sharp points by mathematical expressions comprises subdividing segments that exceed a threshold into subsegments, and defining the subsegments by mathematical expressions.

10. The computer readable medium of claim 9, wherein the threshold comprises a segment having a turn angle greater than a defined limit.

5 11. The computer readable medium of claim 10, wherein the defined limit is 2π .

10 12. The computer readable medium of claim 10, wherein the threshold further comprises a defined error tolerance for the mathematical expression.

15 13. The computer readable medium of claim 9, wherein the threshold comprises a defined error tolerance for the mathematical expression.

20 14. The computer readable medium of claim 1, having further computer-executable instructions comprising:

combining the backbone spline with information about the digital ink file to create a contour curve for the digital ink file; and

displaying the contour curve.

15. The computer readable medium of claim 14, wherein displaying the contour curve comprises separating the contour

curve into a plurality of straight segments, and rendering the plurality of straight segments.

16. The computer readable medium of claim 15, wherein
5 displaying the contour curve further comprises applying an antialiasing effect to each of the straight segments, wherein the antialiasing effect comprises an antialiasing filter that filters edges of an image more than the center of the image.

17. The computer readable medium of claim 15, wherein
10 displaying the contour curve further comprises aligning the ends of the straight segments by averaging pixels located at the ends of the segments.

18. A computer system comprising:
15 an antialiasing component that filters edges of an image more than the center of the image.

19. The computer system of claim 18, wherein the
20 antialiasing component filters an image based upon human perception characteristics.

20. The computer system of claim 19, wherein the human perception characteristics comprises contrast sensitivity.

21. The computer system of claim 18, wherein the antialiasing component utilizes a GUPTA-SPROULL algorithm to provide the filtering effect.

5

22. The computer system of claim 18, wherein the antialiasing component utilizes a plurality of filters that are applied to each scan line of the image, the plurality of filters comprising:

at least one central filter, configured to filter the image adjacent to the center of the image, and that filters at a first threshold; and

at least one outer filter, configured to filter the image adjacent to an edge of the image, and that filters at a second threshold higher than the first threshold.

23. The computer system of claim 22, wherein the second threshold is set based upon human perception characteristics.

24. The computer system of claim 23, wherein the human perception characteristics comprise contrast sensitivity.

25. The computer system of claim 22, wherein the number of central filters is one, and the number of outer filters is

two, and the outer filters are arranged on opposite sides of the outer filter and so that each outer filter is adjacent to a different edge of the image.

5 26. The computer system of claim 22, wherein each of the filters have conic sections, and each have the same scant line, but the outer filters are decreased in size by a decrease factor.

10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100

27. A computer readable medium having computer-executable instructions, comprising:

separating a digital image file into a plurality of line segments;

altering each of the line segments to generate a displayable image file for each of the line segments, each displayable image file including a set of pixel values defined for imaging the image file;

determining whether adjacent line segments exceed a threshold; and

20 if the adjacent line segments exceed the threshold, adding a leaking pixel value to the adjacent line segments to smooth the ends of the line segments.

28. The computer readable medium of claim 27, wherein altering the line segments comprises applying an antialiasing effect to each of the straight segments, wherein the antialiasing effect comprises an antialiasing filter that
5 filters edges of an image more than the center of the image.

29. The computer readable medium of claim 27, wherein determining whether adjacent line segments exceed a threshold comprises determining whether an angle formed between the line
10 segments exceeds a particular angle.

30. The computer readable medium of claim 29, wherein the particular angle is 45 degrees.

31. The computer readable medium of claim 27, having further computer-executable instructions comprising:
15

averaging gray values of pixels adjacent to the leaking pixel to form an averaged gray value, and assigning the averaged gray value to the leaking pixel.

20
32. The computer readable medium of claim 31, wherein each of the displayable image files of two adjacent line segments includes a pixel value for the same pixel, and having further computer-executable instructions comprising: averaging

the pixel values for the same pixel to form an average gray value, and assigning the averaged gray value to the same pixel.

5 33. The computer readable medium of claim 27, wherein
each of the displayable image files of two adjacent line
segments includes a pixel value for the same pixel, and having
further computer-executable instructions comprising: averaging
the pixel values for the same pixel to form an average gray
10 value, and assigning the averaged gray value to the same
pixel.